Failure Rate Calculation

The prediction of the steady-state failure rate for a device is based on a generic steady-state failure rate for the type of device per Telcordia Technologies Special Report SR-332 Issue 3. This generic value is then modified for quality, stress, and temperature. The mean black box steady-state failure rate, λ_{BBi}, is:

$$\lambda_{BBi} = \lambda_{Gi}\pi_{Qi}\pi_{Si}\pi_{Ti}$$

Where:

λ_{Gi} = Mean generic steady-state failure rate for device ***i*** *(Section 8).*
π_{Qi} = 1.0; Quality Factor for device ***i*** *(Section 9.3)*.
π_{Si} = 1.0; Electrical Stress Factor for device ***i*** *(Section 9.2)* based on the percent electrical stress. If stress is unknown, use 1, which assumes 50% electrical stress.
π_{Ti} = Temperature Factor for device ***i*** *(Section 9.1)*. See notes below.

Hall-Effect Current Sensors	**Steady-State FITs* (Failures/Billion Hours)**	**MTBF* (Hours)**
ISB Series (Connector/Lead-Wire)	94.2	10,618,736
ISC Series (Connector/Lead-Wire)	94.2	10,618,736
ISE Series (PCB Mounting)	94.2	10,618,736
Magnetic Components	**Steady-State FITs* (Failures/Billion Hours)**	**MTBF* (Hours)**
Gate Drive Transformers (GT and XT Series)	19.7	50,731,486
Current Sense Transformers (CT Series)	6.0	165,722,855
Fixed Inductors (Class D and High Current Power Inductors)	1.8	552,409,518
High Current Inductors (LP Series and Non-Standard Inductors)	1.8	552,409,518

** MTBF: Calculated from FITs (MTBF=10^9 (hours) / FITs)*
** Hall-Effect Current Sensors FITs : π_{Ti} = 1.0; @ 40°C; (Section 9.1)*
** Magnetic Components FITs : π_{Ti} = 2.0; @ 85°C; Ea = 0.15eV*

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